

Name_____

Chemistry I: Gas Law Problems

Period_____

Date_____

Gases collected over water 4

IMPORTANT NOTE: A gas collected over water is always considered to be saturated with water vapor.

The vapor pressure of water varies with temperature and **must be looked up in a reference source.**

1. 500.0 mL of a gas was collected over water at 20.0 °C and 720.0 mmHg. What is its volume at STP?
2. A sample of gas collected over water occupies 50.0 L at 15 °C and 640 mmHg pressure. What is the dry volume at STP?
3. 690.0 mL of oxygen are collected over water at 26.0 °C and a total pressure of 725.0 mm of mercury. What is the volume of dry oxygen at 52.0 °C and 800.0 mm pressure?
4. 400.0 mL of hydrogen are collected over water at 18.0 °C and a total pressure of 740.0 mm of mercury. Correct the volume to STP.
5. A 45.0 mL sample of argon gas is collected over water at 729.3 mmHg and 25.0 °C. What would be the volume of this dry gas at standard conditions?
6. A 19.1 L sample of He gas is collected over water at 681.3 mmHg and 18.5 °C. What would be the volume of this dry gas at standard conditions?

7. 407 mL of H_2 gas is collected over water at 785.3 mmHg and 23.5°C . What would be the volume of this dry gas at standard conditions?

8. 93.0 mL of O_2 gas is collected over water at 0.930 atm and 10.0°C . What would be the volume of this dry gas at standard conditions?

9. 6.12 L of wet xenon gas is collected at 200 kPa and 80.0°C . What would be the volume of this dry gas at standard conditions?

10. A sample of oxygen collected over water when the atmospheric pressure was 1.00 atm and the room temperature, 25.5°C occupied 105.8 mL. What would be the volume of this dry gas at standard conditions?

11. 1.000 L of hydrogen gas is collected over water at 30.0°C at a pressure of 831.8 mm Hg. Find the volume of dry hydrogen collected at STP.

12. 50.6 mL of a gas is collected over water at 18.0°C and 755.5 mm Hg pressure. What is the volume of dry gas at STP?

13. A certain mass of oxygen gas was collected over water when KClO_3 was decomposed by heating. The volume of oxygen collected was 720 mL at 25.0°C and a pressure of 755 mm Hg. What would the volume of the oxygen be at STP?

14. A sample of oxygen is collected in a 175 mL container at 15°C . If the pressure reading in the lab is 752.0 mm Hg, what volume would the dry gas occupy at 77.0 mm Hg and 15°C ?

15. If 120 mL of helium is collected over water at 25°C and 785.0 mm Hg, calculate the volume of the dry helium at STP?

16. Hydrogen gas is collected by water displacement. Total volume collected is 0.461 L at a temperature of 17°C and a pressure of 0.989 atm. What is the volume of dry hydrogen gas collected at STP?

17. A certain experiment generates 2.58 L of hydrogen gas, which is collected over water. The temperature is 20°C and the atmospheric pressure is 98.60 kPa. Find the volume that the dry hydrogen would occupy at STP.

18. 15.1 L of H_2 gas is collected over water at 681.3 mmHg and 18.5 °C. What would be the volume of this dry gas at standard conditions?

19. 1.200 L of hydrogen gas is collected over water at 21.0 °C at a pressure of 823.8 mm Hg. Find the volume of dry hydrogen collected at STP.

20. What is the volume of a gas at STP if 720.0 mL of a gas is collected over water at 25.0 °C and 3.00 atm pressure?